

CLAIMS

1. A unitary wall or ceiling panel comprising

a first layer predominantly of a solidified gypsum based material and of a non cavity defining structure, said first layer defining a first exterior major surface of the panel and

5 a second layer of a solidified gypsum based material having a plurality of preferably substantially homogenously provided cavities, said second layer engaged with the first layer and disposed from the side of said first layer opposite to said first exterior major surface,

said cavities each including anhydrate material of a kind having a water content dependent volumetric displacement, said cavities having been formed by the volumetric
10 shrinking of said anhydrate material resultant from the dissipation of water from said unitary panel gypsum wet phase precursor during its curing to a solidified state.

2. A unitary wall or ceiling panel as claimed in claim 1 wherein said second layer is engaged directly to said first layer.

3. A unitary wall or ceiling panel as claimed in claim 1 wherein a third layer is provided as
15 part of said panel capturing said second layer between said first and third layer, said third layer being of a solidified gypsum based material of a non cavity defining structure and defining a second exterior major surface of said panel.

4. A unitary wall or ceiling panel as claimed in claim 3 wherein said third layer is substantially similar to said first layer.

20 5. A unitary wall or ceiling panel as claimed in claim 3 wherein said first, second and third layers are coextensive.

6. A unitary wall or ceiling panel as claimed in claim 3 wherein at least one of said first and second major surface of said panel is provided with a patterned non planar surface.

7. A unitary wall or ceiling panel as claimed in claim 1 wherein at least one of said first
25 and second major surface consists of a plurality of upstands.

8. A unitary wall or ceiling panel as claimed in claim 7 wherein each said upstand is prismatic in shape.

9. A unitary wall or ceiling panel as claimed in claim 1 wherein at least one of said first and second major surface of said panel is a cobbled surface.

30 10. A unitary wall or ceiling panel as claimed in claim 3 wherein said first and third layer is substantially of gypsum.

11. A unitary wall or ceiling panel as claimed in claim 9 wherein said third and first layers include EVA additive.
12. A unitary wall or ceiling panel as claimed in claim 9 wherein said first and third layers include a fibre re-enforcing material.
- 5 13. A unitary wall or ceiling panel as claimed in claim 1 wherein said anhydrate material is a polyacrylate.
14. A unitary wall or ceiling panel as claimed in claim 1 wherein said anhydrate material is a potassium polyacrylate.
15. A method of providing a unitary wall or ceiling panel which comprises the steps of
 - 10 a) providing a layer of wet pre-solidified phase gypsum based material and anhydrate material homogenous mixture, onto a layer of wet pre-solidified phase gypsum based material without said anhydrate,
 - b) allowing curing to a solidified phase of said gypsum to occur.
16. A method as claimed in claim 15 where the method further includes the provision of a
15 layer of wet pre-solidified phase gypsum based material onto to the exposed surface of the layer of pre-solidified phase based gypsum and anhydrate material homogenous mixture.
17. A method as claimed in claim 15 wherein the method further includes the provision of a layer of gypsum based material onto the exposed surface of wet pre-solidified phase gypsum and anhydrate material homogenous mixture by the dispersing of a gypsum based power form
20 material onto the the exposed surface of wet pre-solidified phase gypsum and anhydrate material homogenous mixture.
18. A method as claimed in claim 15 wherein said third mentioned layer is absent of anhydrate material.
19. A method as claimed in claim 15 wherein said anhydrate is a polyacrylate.
- 25 20. A method as claimed in claim 19 wherein said polyacrylate is potassium acrylate.
21. A method as claimed in claim 16 wherein said third mentioned layer prior to it setting is screeded to provide a planar surface finish.
22. A method as claimed in claim 16 wherein a fibrous material is provided in at least one of the first and third mentioned layers.
- 30 23. A method as claimed in claim 22 wherein said fibrous material is fibreglass.
24. A method as claimed in claim 15 wherein said second mentioned layer is applied onto a horizontal moulding surface which during the curing of said layers provides upward support to said layers.

25. A method as claimed in claim 24 wherein said moulding surface has an patterned relief moulding surface to impart a non-planar surface to said second mentioned layer.

26. A wall structure of a building comprising

a vertically extending frame work spanning between a floor and ceiling of said building

5 a wall panel subassembly comprising a first panel and at least one other panel

said second panel engaged to said first panel in a substantially parallel manner and separated therefrom to define a space there between, said first and second panels engaged to each other in a separated manner by a compressible material spacer element,

10 wherein said subassembly is mounted from and affixed to said frame work by mechanical fastening means in a manner wherein said first panel is positioned facing said frame work and wherein a compressible material spacer element is provided intermediate of said first panel and said framework.

27. A wall structure as claimed in claim 26 wherein said first and second panels are coextensively engaged with each other.

15 28. A wall structure as claimed in claim 26 wherein said first panel comprises

a first layer predominantly of a solidified gypsum based material and being of a non cavity structure, said first layer defining a first exterior major surface of the panel and

20 a second layer of a solidified gypsum material having a plurality of substantially homogenously provided cavities, said second layer engaged with the first layer and disposed from the side of said first layer opposite to said first exterior major surface,

said cavities each including anhydrate material of a kind having a water content dependent volumetric displacement, said cavities having been formed by the volumetric shrinking of said anhydrate material resultant from the dissipation of water from said unitary panel gypsum wet phase precursor.

25 29. A wall structure as claimed in claim 28 wherein said second panel is of a homogenous gypsum based structure.

30. A wall structure as claimed in claim 27 wherein the surface of said first panel facing said frame structure side is non planar.

30 31. A wall structure as claimed in claim 30 wherein said surface of said first panel facing said frame structure is of a cobbled or prismatic texture.

32. A wall structure as claimed in claim 26 wherein said compressible material spacer is a strip material and extends at least proximate to the perimeter of and between the first and second panels.

33. A wall structure as claimed in claim 26 wherein a second wall panel sub assembly is provided and disposed from the other side of said frame work, said second wall panel sub assembly comprising a first panel and at least one other panel

said second panel engaged to said first panel in a substantially parallel manner and separated therefrom to define a space there between, said first and second panels engaged to each other in a separated manner by a compressible material spacer element,

10 wherein said second subassembly is mounted from and affixed to said frame work by mechanical fastening means in a manner wherein said first panel is positioned facing said frame work and wherein a compressible material spacer element is provided intermediate of said first panel and said framework.

34. A wall structure as claimed in claim 33 wherein the distance between the first panel of said first wall panel subassembly and the first panel of the second wall panel sub assembly is approximately 170 mm.

35. A wall structure as claimed in claim 33 wherein said frame work comprises of vertically extending timber studs.

36. A wall structure as claimed in claim 33 wherein said frame work comprises two parallel and separated rows of studs a first row with which the first sub assembly is engaged and a second row with which said second sub assembly is engaged.

37. A wall structure as claimed in claim 33 wherein said first panel of said first sub assembly and said first panel of said second sub assembly each included a cobbled or prismatic surface detail.

25 38. A wall or ceiling panel assembly comprising

a first planar panel of a rigid sheet material

a second planar panel of a rigid sheet material affixed to said first wall panel in a spaced apart disposition from said first wall panel, wherein the major surfaces of said first and second planar panels are parallel and in at least a significant overlapping relationship with each other

30 at least one resiliently flexible element disposed between the facing major surfaces the first and second panels and sealing engaged to the facing surfaces of each panel,

wherein at least one of said first and second panels (hereinafter the "cavity panel") comprises

a first layer predominantly of a solidified gypsum based material and of a non cavity defining structure, said first layer defining a first exterior major surface of the panel and

5 a second layer of a solidified gypsum based material having a plurality of preferably substantially homogenously provided cavities, said second layer engaged with the first layer and disposed from the side of said first layer opposite to said first exterior major surface,

said cavities each including anhydrate material of a kind having a water content dependent volumetric displacement, said cavities having been formed by the volumetric
10 shrinking of said anhydrate material resultant from the dissipation of water from said unitary panel gypsum wet phase precursor

a third layer predominantly of a solidified gypsum based material and of a non cavity defining structure, said third layer defining a second exterior major surface of the panel.

39. A wall or ceiling panel assembly as claimed in claim 38 wherein at least one of the first
15 or second exterior major surfaces of said cavity panel(s) is of a non planar surface consisting of plurality closely or abuttingly spaced upstands.

40. A wall or ceiling panel assembly as claimed in claim 38 wherein one of the first or second exterior major surfaces of said cavity panel(s) is of a non planar surface consisting of plurality closely or abuttingly spaced upstands.

20 41. A wall or ceiling panel assembly as claimed in claim 38 wherein only one of said first and second panels is a cavity panel.

42. A wall or ceiling panel assembly as claimed in claim 38 wherein the exterior (to said assembly) facing major surface of said cavity panel is of a non planar surface consisting of plurality closely or abuttingly spaced upstands.

25 43. A wall or ceiling panel assembly as claimed in claim 38 wherein the major surface of said cavity panel facing the other of said first and second panels is of a non planar surface consisting of plurality closely or abuttingly spaced upstands.

44. A wall or ceiling panel assembly as claimed in claim 38 wherein said resiliently flexible element is a strip material and is provided between the first and second panels at or
30 immediately inwardly of the overlying perimeter regions of said first and second panels.

45. A wall or ceiling panel assembly as claimed in claim 38 wherein said first and second panels are affixed to each other in a substantially coextensive relationship.